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SCIENTIFIC PASSENGER POD

ADDENDUM

TO

ANNEX

FLIGHT TEST

DIRECTIVE

MISSILE N-24

(U)

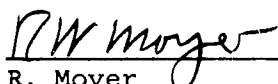
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FOREWORD

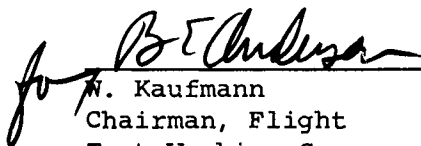
The flight preparations and flight test of the scientific passenger pod carried on Missile N-24 will be conducted following the requirements established by the Annex Flight Test Directive Missile N-24. This document was prepared by the Martin Company in accordance with paragraph 3.3.2.2 of BMS-TII-CD-71000 Titan II Data Requirements Specifications.

CONCURRENCE

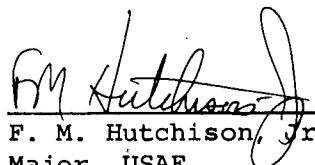
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1.0 INTRODUCTION

This Addendum together with the Basic Flight Test Directive, Lot N, MT-61-78449 and the Annex Flight Test Directive, Missile N-24 (U), MT-63-5073 specifies the AMR test program for the N-24 missile, USAF serial number 61-2747 and the scientific passenger pod (SPP) number T-202.

Two telemetry packages will be ejected from the pod, after BECO, to determine the plume radiational characteristics and what effects the plume has on the ejected packages.

The test period is from lift-off to splash of the ejected packages.

2.0 TEST OBJECTIVE

- 2.1 The following test objective for the test of the SPP is a secondary "B" objective with reference to the flight test of missile N-24.

"Conduct the Scientific Passenger Pod experiment."

Verify the compatibility of the Scientific Passenger Pod and the airframe throughout powered flight using airframe telemetry, SPP telemetry and engineering sequential data. Verify that the SPP is capable of carrying and ejecting two (2) experiment probes (peas). Obtain data to determine the spectrum and radiation intensity of the Stage II engine plume at two different altitudes. Determine the effects of the plume on the two instrumentation capsules ejected during Stage II flight."

3.0 CONFIGURATION AND DESCRIPTION

- 3.1 The pod is a wedge shaped fiber glass section formed to fit the Stage II tail skirt of the missile in Quadrant I. It is 55 inches long, 25 inches deep and 46 inches wide. The pod contains two cylindrical experimental packages which are spring ejected. Each package is self contained and weighs about 90 pounds.
- 3.2 The two instrumented packages will be ejected from the pod, one at about 300,000 feet and the second at 600,000 feet altitude. First ejection occurs at BECO +15 seconds and the second at BECO +85 seconds. The path of the packages will be through the missile plume where they will collect and transmit data.
- 3.3 The telemetry system will consist of two RF links, one for each package, on 234 mc and 258.5 mc. The quadra-loop antennas with predominately vertical polarization are located at the aft end of the package, 180 degrees apart. Power is two watts and maximum deviation is ± 125 kc. Coding is PAM/FM/FM. Continuous channels are 3.0 through 14.5, and 30 through 70 kc. 22 kc is commutated at 30 X 5.

Link 234.0 is contained in the package to be ejected at BECO +15 seconds. Link 258.5 is contained in the package to be ejected at BECO +85 seconds. Although both transmitters are expected to be active from prior to lift-off, no radiation is expected to escape from the packages until their release from the pod. Therefore, stations should track the frequency required in the Titan Operations Directive until signal is received on the package telemetry.

- 3.4 The following Martin measurements will be recorded as indicated:

- 1300 SPP Timer 1, 2, 3 Eject Monitor Exp. 1 & 2, PCM Channel 70, Roll 34
- 1315 Pressure SPP Seal, Sanborn recorder and PCM Channel 12, Roll 32

Environmental measurements are listed in Appendix I to the Annex Flight Test Directive.

- 3.5 The SPP seal will be pressurized to 15 +2 -0 psig with an allowable drop to 13 psig, at which time a hold will be called and the seal repressurized. A verbal hold shall be called if a pressure drop occurs after T-60:00 minutes and before T-04:00 minutes. Between T-04:00 minutes and T-00:02 seconds manual hold capabilities will be in effect.

4.0 DATA INSTRUMENTATION

4.1 Station 1 (T/M Bldg. 2)

4.1.1 SS/CF Recorder

Recorder #1

<u>Pen</u>	<u>Signal</u>
1	SS Link 234.0 (TLM-18 RH)
2	SS Link 234.0 (TLM-18 LH)
3	SS Link 234.0 (Trihelix #1)
4	SS Link 234.0 (Trihelix #2)
5	SS Link 258.5 (TLM-18 RH)
6	SS Link 258.5 (TLM-18 LH)
7	SS Link 258.5 (Trihelix #1)
8	SS Link 258.5 (Trihelix #2)

Recorder speed is 2.5 mmps

4.1.2 Magnetic Tape Recorders

CEC Magnetic Tape Recorder #1

<u>Track</u>	<u>Signal</u>
1	Link 234.0 (Combined)
2	Link 234.0 (Combined)
3	Link 234.0 (Combined)
4	*Voice direct during annotation only 100 pps code on 1 kc 1 pps code on 30 kc 100 kc reference
5	Link 258.5 (Combined)
6	Link 258.5 (Combined)
7	Link 258.5 (Combined)

* During annotation, do not record the timing and reference signals.

Run from T-5 seconds until loss of signal. However, if data is required prior to this time, extend the recording interval to include the interval required for oscillograms.

4.2 Station 5

4.2.1 SS/CF Recorders

Recorder #1

<u>Pen</u>	<u>Signal</u>
1	SS Link 234.0
2	CF Link 234.0
3	SS Link 258.5
4	CF Link 258.5
5	Blank
6	Blank
7	Azimuth
8	Elevation

Recorder speed is 2.5 mmps. Start at T-0.

4.2.2 CEC Magnetic Tape Recorders #1 and #2

<u>Track</u>	<u>Signal</u>
1	Link 234.0
2	Link 234.0
3	Link 234.0
4	* Voice direct during annotation only. 100 pps code on 1 kc 1 pps code on 30 kc 100 kc reference
5	Link 258.5
6	Link 258.5
7	Link 258.5

* During annotation, do not record the timing and reference signals.

Start recorders at T-0.

4.3 Station 7

4.3.1 SS/CF recorders

Recorder #1

<u>Pen</u>	<u>Signal</u>
1	SS Link 234.0
2	CF Link 234.0
3	SS Link 258.5
4	CF Link 258.5
5-8	Blank

Speed is 2.5 mmps. Start at T-0.

4.3.2 Magnetic Tape Recorders

CEC Magnetic Tape Recorders #1 and #2

<u>Track</u>	<u>Signal</u>
1	Link 234.0
2	Link 234.0
3	Link 234.0
4	* Voice direct during annotation only 100 pps code on 1 kc 1 pps code on 30 kc 100 kc reference
5	Link 258.5
6	Link 258.5
7	Link 285.5

* During annotation, do not record the timing and reference signals.

Start recorders at T-0.

4.4 Station 91

4.4.1 SS/CF Recorders

Recorder #1

<u>Pen</u>	<u>Signal</u>
1	SS Link 234.0 (Trihelix)
2	SS Link 234.0 (TLM-18 RH)
3	SS Link 234.0 (TLM-18 LH)
4	SS Link 258.5 (Trihelix)
5	SS Link 258.5 (TLM-18 RH)
6	SS Link 258.5 (TLM-18 LH)
7	TLM-18 Azimuth
8	TLM-18 Elevation

Recorder speed is 2.5 mm/ps. Start at T+200 seconds.

4.4.2 Magnetic Tape Recorders

CEC Magnetic Tape Recorder #1

<u>Track</u>	<u>Signal</u>
1	Link 234.0 (Trihelix)
2	Link 234.0 (TLM-18 RH)
3	Link 234.0 (TLM-18 LH)
4	* Voice direct during annotation only 100 pps code on 1 kc 1 pps code on 30 kc 100 kc reference
5	Link 258.5 (TLM-18 LH)
6	Link 258.5 (TLM-18 RH)
7	Link 258.5 (Trihelix)

* During annotation, do not record the timing and reference signals.

Start recorder at T-0.

5.0 DATA PROCESSING AND DISPOSITION

The Best Estimate of Trajectory (BET) will be the same as that provided for missile N-24, except translated to latitude, longitude and height.

Trajectory data on the two ejected packages will be calculated mathematically for vacuum conditions. Data will be referenced to T-0.

Actual package ejection times shall be furnished by DWTBS to Major L. Parker, Office of Aerospace Research, PAFB, telephone number UL7-7251, as soon after the flight as possible.

Station 1 - Tel 2, and Station 91.

ITEM	CLASS	SOURCE/LOCATION	TYPE	QUANTITY	RECIPIENT
*.5-1	U	CEC Mag Tape Rcdr.	Mag Tape	1	Orig & 1 cy to PO in 8 days
*.5-2	U	SS/CF Rcdr.	Roll Chart		Orig to PO, 1 cy to Ops Plng/ TLM
*.5-3	U	TLM Log	Sheet	3	1 to PO, 1 to Ops Plng/TLM, Performance Analysis

* Insert applicable station number - 1 or 91.

Stations 5 and 7

*.5-1	U	CEC Mag Tape Rcdr. #1	Mag Tape	1	Cape TLM
*.5-2	U	CEC Mag Tape Rcdr. #2			Orig & 1 cy to PO in 8 days
*.5-3	U	SS/CF Rcdr.	Roll Chart		Orig to PO, 1 cy to Ops Plng/ TLM
*.5-4	U	TLM Log	Sheet	3	1 to PO, 1 to PA, 1 to Ops Plng/TLM

* Insert applicable station number - 5 or 7.

TABLE 5-1: TELEMETRY

ITEM	DATA	RANGE INTERVAL	PTS/SEC	CLASS	DELIVERY TIME	NO. CYS FORMAT	RECIPIENT
1	BET from concurrently scheduled missile in Lat., Long., Ht. on WGS (De- grees, feet)	*	2	S	T+14 WD	2-Tab	MTQUS via Aerospace
2	#1 package computed tra- jectory (Lat., Long., Ht. on WGS)**	Ejection to re-entry	2	S	T+10 WD	2-Tab	MTQUS via Aerospace
3	#2 package computed tra- jectory (Lat., Long., Ht. on WGS)**	Ejection to re-entry	2	S	T+10 WD	2-Tab	MTQUS via Aerospace
4	Plotting on one 30 x 30 plot should be Ht. vs. Time for each of above three trajectories.	BECO to end of above data	2	S	T+16 WD	2-Plot	MTQUS via Aerospace

* Item #1 Range Interval. P.O. desires as much of actual trajectory as possible. Gaps in BET data should be filled in with single Rdr Data.

** Items #2 and 3 computed pod trajectories should not be drag corrected. P.O. will supply ejection times. Reduction should start at nearest point after ejection. Time should be ref. to concurrent scheduled missile T-0.

TABLE 5-2: PROCESSED DATA - FINAL